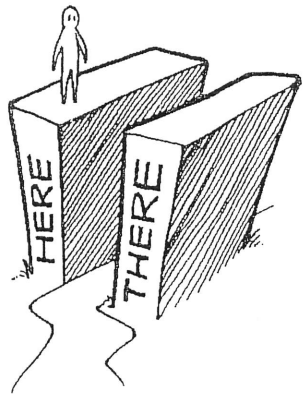
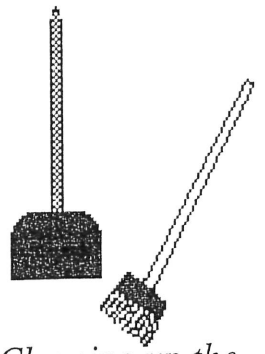


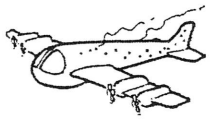
3.2C Using the Present State/Desired State Technique

How many times have you heard the statement "You can't get there from here?" The *Present State/Desired State* technique helps us verbalize where we are and where we want to go, so that an appropriate path can be found and we can indeed get there from here. The Present State/Desired State technique also helps us learn whether the solution goals (Desired State) are consistent with our needs (Present State).[3] When writing the Desired State statement, avoid using ambiguous and vague words or phrases like "best," "minimal," "cheapest," "within a reasonable time," "most efficient," etc. because these words mean different things to different people. Be quantitative where possible. For example, "The children's playground needs to be completed by July 1, 1994 at a cost under $100,000" *as opposed to* "The playground should be completed in a reasonable time at minimal cost." It is important that the Present State statement match the Desired State statement. In order for the Present State and Desired State to match, every concern in the Present State should be addressed in the Desired State. In addition, the Desired State should not contain solutions to problems that are not in the Present State. Sometimes a match exists, but it really doesn't get to the heart of the problem or allow many solution alternatives. Reworking the Present State and Desired State statements until they match is a technique that increases the probability of arriving at the true problem statement. Let us consider the following example of the Present State/Desired State Technique.



Cleaning up the Problem Statement

Missing the Mark



During World War II, a number of aircraft were shot down while engaging in bombing missions over Germany. Many of the planes that made it back to base safely were riddled with bullet and projectile holes. The damaged areas were similar on each plane.

The following instructions were given to solve the perceived problem: "Reinforce these damaged areas with thicker armor plating."

Round 1

Present State

Many bullets/projectiles penetrating aircraft

Desired State

Fewer planes being shot down

This is not a match because many surviving planes also have bullet holes. There is not a *one-to-one mapping* of the needs of the present state being addressed and resolved in the desired state.

Round 2

Present State

Many bullets/projectiles penetrating aircraft

Desired State

Fewer bullet holes

These states are matched, but the distinction between the present state and the desired state is not clear enough. It may take only a single bullet hitting a critical area to down a plane.

Round 3

Present State

Many bullets/projectiles penetrating aircraft in critical and noncritical areas

Desired State

Fewer bullets/projectiles penetrating critical areas

These two statements now match and the distinction between them is sharp, opening up a variety of solution avenues, such as reinforcing critical areas, moving critical components (e.g., steering mechanisms) to more protected locations, and providing redundant critical components.

The original instructions given to solve the perceived problem would have failed. Reinforcing the areas where returning planes had been shot would have been futile. Clearly, these were noncritical areas; otherwise, these planes would have been casualties as well.

A more appropriate problem statement can now be written as follows: "Find a way to protect the critical parts of the aircraft from being damaged by projectiles."